

REMARKS

By this amendment, claims 1-36 have been cancelled, and claims 37-56 have been added. Thus, claims 37-56 are now active in the application. Reexamination and reconsideration of the application are respectfully requested.

The specification and abstract have been carefully reviewed and revised to make grammatical and idiomatic improvements in order to aid the Examiner in further consideration of the application. The amendments to the specification and abstract are incorporated in the attached substitute specification and abstract. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the specification and Abstract by the current amendment. The attachment is captioned "Version with markings to show changes made."

In item 1 on page 2 of the Office Action, new corrected drawings in compliance with 37 CFR 1.121(d) were required due to hard-to-read shading in Fig. 1. Accordingly, replacement drawing sheets are submitted herewith for Figs. 1, 13, 15, 18 and 20. Figs. 1, 13 and 15 have been improved in the clarity of the coils, so as to overcome the concern noted in item 1 on page 2 of the Office Action. Additional revisions have been made in the drawings, in that the section line labels "A-A" and "B-B" have been changed to --6-6-- and --7-7--, respectively, in Fig. 1; the section line label "C-C" has been changed to --16-16-- in Fig. 15; the reference numeral 401 has been added into Fig. 18 to show the opening 401 in the floor 40 as referenced in paragraph [0089] on pages 21 and 22 of the original specification; and the section line label "D-D" has been changed to --21-21-- in Fig. 20. The specification has been amended with respect to the section line labels as discussed above, so as to be consistent with the drawings, in accordance with U.S. PTO drawing requirements. Thus, entry and approval of the replacement drawing sheets are respectfully requested.

In item 2 on page 2 of the Office Action, a new title was required, and the Examiner kindly suggested the title "HEAT SINK WITH METAL WIRE COIL FINS." This suggested title has been adopted, and accordingly, the requirement in item 2 on page 2 of the Office Action has been satisfied.

In items 3-10 on pages 2-6 of the Office Action, claims 1-5, 10, 11, 14-16 and 21-24 were rejected under 35 U.S.C. 102(b) as being anticipated by Andersson et al. (U.S. 3,232,344); claims 6-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. in

view of Marukasa (JP 05-166982); claims 12, 13, 17 and 25-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. in view of Kimura (JP 03-014300); claims 18, 19 and 28-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. in view of Fromson et al. (U.S. 5,833,931); and claims 20 and 34-36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. in view of Luo (U.S. 2004/0100771). These rejections are respectfully traversed in part and, in any event, are believed moot in view of the cancellation of claims 1-36. Furthermore, these rejections are submitted to be clearly inapplicable to the new claims 37-56, for the following reasons.

With exemplary reference to the present drawing figures, new independent claim 37 sets forth a heat sink comprising: fins 11 formed of metal wires 12, 13 wound into coils, including a right-handed coil and a left-handed coil (see Figs. 3 and 4, as well as paragraphs [0060] – [0061]); and a thermally conductive base plate 10 retaining the fins 11; wherein each of the right-handed coil and the left-handed coil has plural turns respectively constituting mutually aligned coil elements 11a, 11b; and wherein the right-handed coil and the left-handed coil are combined and flattened (see Fig. 5) such that the coil elements 11 are in close contact with each other, so as to form air gaps 112 and contact parts 113.

In contrast to the present invention of claim 37, the Andersson et al. patent discloses, in Figs. 2, 3a and 3b, a heat transfer element having a wall 1, and helical pipes 2, but the helical pipes 2 are not constituted by a right-handed coil and a left-handed coil that are combined and flattened such that the coil elements are in close contact with each, as required by claim 7.

At lines 3 and 4 on page 3 of the Office Action, it is stated that “Andersson et al. disclose in Figures 2, 3a, and 3b, metal wire coils which are right handed and left handed (see Figures 3a and 3b).” However, as described at lines 44 and 45 of column 1 of the Andersson et al. patent, Figures 3a and 3b of the patent “illustrate two different ways of mounting a heat transfer element according to FIGURE 2”; in other words, the different coils shown in Figs. 3a and 3b are different alternatives for use in the Fig. 2 arrangement. The coils shown in Figs. 3a and 3b of Andersson et al. are not disclosed as being combined and flattened such that the coil elements are in close contact with each other, as required by claim 37.

Accordingly, for at least the reasons presented above, it is believed apparent that claim 37 is not anticipated by the Andersson et al. patent. Further, there is no teaching or suggestion in Andersson et al. that would have caused a person of ordinary skill in the art to modify the

Andersson et al. configuration in such a manner as to result in or otherwise render obvious the present invention as set forth in claim 37. Therefore, it is respectfully submitted that claim 37, as well as claims 38-52 which depend therefrom, are clearly allowable over the prior art of record.

New independent claim 53 is, like previous claim 15, directed to a sheet-shaped heat sink comprising a base film with agglutinant, and fins formed of metal wires wound into coils on the base film. However, claim 53 also specifies that the fins are formed in the same manner as required in claim 37. Specifically, claim 53 specifies that the fins are formed of metal wires wound into coils, including a right-handed coil and a left-handed coil, that each of the right-handed coil and the left-handed coil has plural turns respectively constituting mutually aligned coil elements, and that the right-handed coil and the left-handed coil are combined and flattened such that the coil elements are in close contact with each other, so as to form air gaps and contact parts.

Accordingly, it is respectfully submitted that claim 53, as well as claims 54-56 which depend therefrom, are clearly patentable over the Andersson et al. patent for the same reasons as set forth above in support of claim 37.

The Examiner cited the Marukasa reference for disclosing “fins which are in a groove in the base plate,” the Kimura reference for teaching “a general teaching of ferrite powder on the base,” the Fromson et al. patent for disclosing “the concept of having aluminum fins coated with anodic oxide,” and the Luo publication for disclosing “the concept of coating a metal wire (i.e., fin) (5) with a coating (i.e., thermally conductive material).” However, these secondary references provide no teaching or suggestion that would have obviated the above-discussed shortcomings of the Andersson et al. patent.

The Examiner’s attention is also directed to the dependent claims 38-52 and 54-56 which set forth additional features of the present invention and further define the invention over the prior art. For example, new claims 45 and 54 specify that the right-handed coil and the left-handed coil are mutually intertwined as illustrated in Figs. 3 and 4.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Mitsuo HONMA

/Charles R Watts/

By 2010.03.23 12:55:42 -04'00'

Charles R. Watts

Registration No. 33,142

Attorney for Applicant

CRW/asd
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
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